

VERTEBRAL COLUMN.

Of this part of the skeleton of the Scelidotherium, Mr. Darwin's specimen includes, as is represented in Plate XX., the cervical, part of the dorsal, and the sacral series of vertebræ in a more or less perfect condition.

The cervical vertebræ present the ordinary mammalian number, seven, and are free, or so articulated as to have permitted reciprocal movement upon each other. Their transverse processes are perforated as usual for the vertebral arteries. These processes in the atlas are remarkable for their great breadth, length, and thickness; and indicate the muscular forces which must have worked the head upon the spine to have been very powerful. The axis is provided with a robust 'processus dentatus,' having a base equal in breadth to the body of the axis itself; and a smooth articular convexity on the side of the apex on which the ring of the atlas rotated. The line of union between the axis and its characteristic process, which here resembles the body of an abortive vertebra, is very distinct. The transverse processes of the vertebra dentata are comparatively feeble, but this condition is amply compensated for by the great development of the spinous process. (Pl. XXIV. fig. 1.) This process is bent backwards at nearly a right angle, overlaps with its reflected extremity the spine of the third cervical vertebra, and rests by its base, on the under part of which are the posterior articular surfaces, upon the broad and strong anterior oblique processes of the third vertebra.

The third, fourth, fifth, and sixth cervical vertebræ have moderately developed and pointed spinous processes: their transverse processes are broad, and extend obliquely backwards, and slightly overlap each other. On the under part of the transverse process of the sixth cervical vertebra there is the fractured base of what I conjecture to have been an expanded aliform plate, analogous to that observable in the corresponding vertebra of the Orycteropus. The seventh cervical vertebra has part of the articular depression for the head of the first rib upon each side of its body: the transverse process is feebly developed, but the spine is double the height and size of those of the preceding vertebræ.

The spinous process of the first dorsal vertebra in like manner rises to twice the height of the preceding spine of the seventh cervical, and preserves an equal antero-posterior diameter from its base to its summit, which is thick and slightly bent backwards: four or five succeeding dorsal vertebræ give evidence of having been surmounted by spines of equal height and strength. The transverse processes of these dorsal vertebræ present bold concavities on their inferior part for the reception of the tubercles of the ribs, and they gradually ascend upon the base of the spines as the vertebræ are placed further back, so as to increase the expansiveness

of the chest. The state of the fossil did not afford further information as to the condition of this part of the vertebral column, but the parts which have been preserved are precisely those from which the most interesting inferences as to the affinities and habits of the extinct quadruped can be deduced.

Whether the Megatherium be most nearly allied to the tribes of the Sloth or Armadillo has been a question under recent discussion, and, as a corollary of this problem, whether its habits were those of a scansorial or of a fossorial quadruped. For, strange as it may appear at first sight, there have not been wanting arguments, and those urged by an anatomist to whom we owe much novel and interesting information respecting the extinct Edentata, in support of the belief that the Megatherium, gigantic and ponderous as must have been its frame, actually climbed trees like a Sloth, and had claws and feet organised for prehensile actions, and not in accordance with that type by which they are usually adapted for digging up the soil.*

Now, in whatever degree the Megatherium may be involved in this question, the smaller Megatherioid species at present under consideration must be at least equally implicated in it. In the adaptation of the frame of a mammiferous quadruped for especial and peculiar actions and modes of life, such as for climbing and living in trees, or for burrowing and seeking concealment in the earth, not only the immediate instruments, as the feet, are modified, but the whole of the osseous and muscular fabric is more or less impressed with corresponding adaptations, whilst at the same time these special adjustments are invariably subordinated to the type of organization which characterizes the group.

The type of the order *Bruta* or *Edentata* is well-marked; one or more claws of unusual length and strength, characterize the fore-feet and sometimes the hind-feet in every genus, and the term 'Macronykia' would more aptly designate them than the term which Cuvier substituted for the good old Linnæan appellation. The uniform absence of true roots to the teeth, where these are present, is another general character; the skeleton exhibits many well-marked peculiarities common to the whole order; while at the same time it is modified in various modes and degrees in accordance with the peculiar habits and exigencies of the species.

One of the regions of the skeleton which manifests adaptive modifications of this kind in the most remarkable degree is the cervical division of the vertebral column. In one edentate species it is lengthened out by two additional vertebræ more than in any other mammal; in another it is reduced by anchylosis to as great an extent below the regular number of moveable pieces: and these, the two most opposite conditions of the cervical vertebræ which are to be met with in the mammiferous class are related to equally diverse and opposite habits of life.

* Lund, Videnskabernes Selskabs, Natur: og Mathem. Afhandlinger, Kiøbenhavn, vol. viii.